

CLAIMS

1. Dynamic air classifier for the separation of granular and powdery materials into fractions of different grain sizes comprising a rotary cage (1),
5 wherein:

- said classifier also comprises a recovery chamber (2) for fine materials with a outlet bottom, said chamber (2) being defined by a casing (5);
- said recovery chamber (2) is coaxially arranged in the
10 protrusion of the rotary cage (1) so as to be able to use the vortex created by the rotary cage for cycloning said material;
- said recovery chamber (2) comprises openings in the casing (5) allowing the passage of the centrifuged material
15 towards ducts (8) for collecting the material located outside the chamber.

2. Classifier as in Claim 1, wherein said recovery chamber (2) comprises fixed and/or mobile deflectors (4,7).

20 3. Classifier as in Claim 1, wherein said recovery chamber (2) for fine materials is cylindrical or cone-shaped, the cone being possibly open either at the top or at the bottom.

25 4. Classifier as in Claim 1, wherein said recovery chamber (2) for fine material has a length that corresponds to 2 to 6 times the length of the rotary cage (1).

30 5. Classifier as in Claim 1, wherein said recovery chamber (2) for fine materials and said rotary cage (1) share the same vertical axis, the recovery chamber (2) being positioned below and protruding from said cage (1).

6. Classifier as in Claim 1, wherein the deflectors (4) that are positioned in the outlet part of the rotary cage (1) and/or in the recovery chamber (2) are driven

by the rotation means of the cage (1) or by a separate device.

7. Classifier as in Claim 1, wherein the deflectors (4) that are positioned in the outlet part of the rotary cage (1) are attached to said cage (1) itself.

8. Classifier as in Claim 1, wherein the air-extraction duct (3) passes through the outlet bottom of the recovery chamber (2), said duct having a diameter between 30 and 95% of the bottom diameter of the recovery chamber (2) for fine materials.

9. Classifier as in Claim 1, wherein a plurality of openings and/or slits are provided at the bottom of the recovery chamber (2).

10. Classifier as in Claim 9, wherein there are a plurality of ducts (8) below said slits and/or openings, leading to a means for conveying the material.

11. Classifier as in Claim 9, wherein there are a plurality of ducts (8) below said slits and/or openings, leading to a circular airslide conveying the material to another means of conveyance.

12. Classifier as in Claim 1, wherein there are, on top of the bottom of the recovery chamber (2), outside the air-extraction duct (3), one or several conical, cylindrical or radial (angled or straight) deflectors (7) so as to minimise the turbulence near the bottom of the chamber and to avoid that the material is picked up again by the air.

13. Classifier as in Claims 1 and 2, wherein there are a plurality of openings in the lower part of the casing (5) of the recovery chamber (2), these openings leading to the ducts for collecting the fine material.

14. Method of separation according to grain sizes by means of a dynamic air classifier, comprising the following steps:

- feeding the material to be treated (13) to the rotary cage (1);

- sorting between large and fine particles in the rotary cage (1) depending on the rotation velocity and air intake;
- rejecting the large particles towards the refuse chamber (17);
- recovering the fine materials in the recovery chamber (2) positioned coaxially with the rotary cage;
- using the vortex created by the rotary cage and possibly further accelerated by mobile or fixed deflectors (4) for cycloning the fine material;
- separating the dedusted air and the fine particles and extraction of the latter to a means of conveyance.

15. Use of the device described in Claim 1 for the separation and classification of particles of mineral materials such as particles of cement, clinker, lime and coal dust.